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ROYAL BOTANIC GARDENS, KEW

XIII.—SIR WILLIAM TURNER THISELTON-DYER, 1843-1928.

Kew mourns the loss of her third Director, Sir William Turner Thiselton-Dyer, K.C.M.G., C.I.E., whose death, on December 23rd, 1928,* has already been recorded in these pages.

The year 1875 marked the commencement of Thiselton-Dyer's official connection with the Royal Botanic Gardens, for in that year the post of Assistant Director, which had been in abeyance for ten years, was revived, and he was invited by the Director, Dr. J. D. Hooker, to take up the position. The choice was a fortunate one, and showed that Hooker had already, from the new line in botanical study and teaching which Dyer had initiated, singled him out as a man likely to make his mark in the botanical world. He had also had the opportunity of testing his ability for the post, as for a time Dyer gave him some help as private secretary.

Thiselton-Dyer was Assistant Director for ten years, and succeeded Sir Joseph as Director in 1885. For the next twenty years, until his retirement on December 15th, 1905 (*see K.B.* 1905, p. 62), Sir William's influence and conspicuous ability marked every sphere of the activities of Kew. No detail in administration was too small to escape his notice, while in the wider realms his broad outlook embraced every aspect of botanical work relating to our Colonies and overseas Possessions. The possibilities of Kew as a great centre for imperial work had been foreseen by Sir Joseph Banks, when he was virtually Director of the Gardens in the days of George III, and it was Thiselton-Dyer who again fully visualised the need and importance of such a centre at the heart of the Empire, and spared no pains to achieve this ideal. Hooker early recognised the remarkable power of vision possessed by his Assistant Director, for he had been definitely selected by him to undertake the growing Colonial work of Kew, which led to so many important and far-reaching results. It may be mentioned here that though Thiselton-Dyer was no traveller and never had the opportunity of visiting any of our overseas domains, yet such was his grasp of a situation and so extensive was his reading, that he knew more of their botany, their economic needs and their possibilities for

*We regret that in *Kew Bulletin* No. 1, 1929, p. 32, Sir William's death was stated to have occurred on Christmas Eve. He died early in the morning of Dec. 23rd.

development than did many of those whose life lay in the countries themselves.

The great work he was able to accomplish for the development of Botanical Enterprise in the widest sense throughout the Empire, fully justified his appointment as Botanical Adviser to the Secretary of State for the Colonies, which post he held until March 31st, 1906, and which was recognised by his being created C.M.G. in 1882, and K.C.M.G. in 1899. The link with India was as close as with the Colonies, and it is of interest to recall that one of his earliest pieces of scientific work (in 1873), was the description of the Indian species of six natural families* of flowering plants, published in Vol. II of the " Flora of British India." The value of the assistance given by Kew especially with regard to the preparation of the " Flora of British India " and to the many questions relating to the economic plants of the country was rewarded by the C.I.E., which was conferred on Thiselton-Dyer in 1892. It will be remembered that Sir William Hooker drew out proposals and submitted a definite scheme for Indian and Colonial Floras in 1865, and, of these, the " Flora of British India " was commenced in 1872. This was still in progress when Thiselton-Dyer became Director in 1885, and to its completion he devoted all the resources of the herbarium, with much supervision on his own part, until the final volume was published in 1897.

With the achievement of this great work in sight, he was able to resume the preparation of the two great African Floras, the " Flora Capensis," commenced in 1859 and suspended after 3 volumes had been published, in 1865, and the " Flora of Tropical Africa," the earlier volumes of which were published during the years 1868-1877. Work on the "Flora Capensis" was resumed in 1896, and it was edited by him with meticulous care, the final volume being published in the year 1925 (*see K.B.* 1925, p. 289).

The preparation of the " Flora of Tropical Africa " was taken in hand again in 1897, and this he edited until 1913, when he passed on the editorship to his successor, Sir David Prain. Those who are able to realise what the editing of these Floras entailed in the way of intimate knowledge and scrupulous accuracy—for Thiselton-Dyer was so competent a descriptive botanist that he was a perfect Editor—will understand that the appellation denoted sustained and detailed labour on his part. He had therefore very little leisure for carrying out much in the way of original research, though the articles he published in botanical journals were always sound and real contributions to the advancement of natural knowledge. In spite of these calls on his time and energies, in addition to his administrative duties as the head of a large Institution—about which something will be said later—he conceived the idea of starting a periodical publication from Kew for the purpose of supplying information to the Colonies, with their Botanic Stations, and to

*Portulacaceae, Tamariscineae, Elatineae, Hypericineae, Ternstroemiaceae, Dipterocarpeae.

overseas possessions generally, on matters of botanical interest and importance in connection with the wider aspects of botanical science, and more especially in connection with their economic resources.

For this purpose, the " Kew Bulletin of Miscellaneous Information " was started in 1887, and in the same connection reference may be made to the publication of the Guide books to the Kew Museums, which he took in hand after he had thoroughly overhauled and re-arranged the collection of specimens illustrating the Economic products derived from the vegetable kingdom. The carrying on and editing of the " Index Kewensis," of Hooker's " Icones Plantarum " from 1895 to 1906 and of the " Botanical Magazine " during 1905 and 1906 were additional tasks to which he gave his most careful attention.

Though the work of Kew was the first call on his time and activities, he was always ready to lend his powerful support to any cause likely to further the progress of Botany and botanical teaching, and the action he took with regard to the Chelsea Physic Garden was of the greatest value, not only because it enabled an historic garden to be preserved, but also because a botanic garden for the promotion of botanical teaching in London was definitely established on sound and safe lines. Thiselton-Dyer took infinite pains, ably supported by Sir Henry Longley, to secure the retention of the Physic Garden as a garden for students, and it was mainly due to his efforts that the scheme finally drawn up by the Charity Commissioners in 1898, after several years of negotiations, was adopted and carried into effect in 1899.

With regard to the University Botanic Garden and the Botany School at Cambridge, he was also called in for advice by Sir Michael Foster and others, with valuable results. The following tribute* from Dr. Walter Gardiner, F.R.S., is of interest in showing the help he gave to the building up of the Botanical Museum at Cambridge, which was one of the many causes connected with the teaching of Botany he was always ready to assist.

" To Sir William Thiselton-Dyer we allude many times in the Reports under the designation Kew. When I state that whatever—in reason—we asked for from Kew we always obtained, and that, besides mere specimens, a vivid personal interest in our doings, and wise advice—sometimes stern, always encouraging—was never denied us, I shall sufficiently show how much we owe him, and anyone conversant with his powers of organisation and administration and his mental outlook and equipment, is in a position to gauge the good fortune that Cambridge Botany has experienced in having as its constant friend the Director of Kew. It is my deliberate opinion that to him—and in more directions than in that of Botany—the University of Cambridge owes a debt of gratitude which she can never repay."

*Extract from " The Foundation and Re-Establishment of the Cambridge Botanical Museum," 1904.

The Botany School at Oxford also owed much to the advice given by Thiselton-Dyer, when the matter of the reorganisation of the Department was being considered in 1884.

In the year 1888 he presided over the Biological Section (D) at the meeting of the British Association held at Bath, the title of his address being "Botanical Biology," and in 1895 he was very properly chosen to be first President of the new Botanical Section (K) at the Ipswich meeting of the Association held in that year, since he was very largely responsible for its creation as a separate Section. Unfortunately he was compelled, owing to the heavy calls of his official work, to decline nomination to the Presidency of the Association.

Thiselton-Dyer became a Fellow of the Linnean Society in 1872, and served on the Council from 1874 to 1876, and again from 1884 to 1887, and was a Vice-President from 1885 to 1887.

In the year 1880 he was elected a Fellow of the Royal Society. He served on the Council for the years 1886–1887 and was Vice-President in 1896–1897. In addition to the work entailed with these Societies he was a Vice-President of the Royal Horticultural Society from 1887 to 1889, and was largely concerned with its resuscitation and reorganisation when it was almost moribund about 1887. It was largely due to his help in initiating a new policy that the present wonderful prosperity of the Society has resulted.

He was also a Fellow of the University of London from 1887 to 1890.

Other calls on his time were his service as a Royal Commissioner for the Melbourne Centennial Exhibition in 1888, the Paris International Exhibition in 1900, and the St. Louis Exhibition in 1904. During the summer of 1900 Thiselton-Dyer served on the Departmental Committee appointed by the Board of Agriculture to enquire into the conditions under which agricultural seeds are sold. To the report, which he signed, he added some reservations which exhibit his usual broad grasp of a complicated and difficult situation (*see* Cd. 489 and 493, Committee on Agricultural Seed, 1901).

It was in this year also that he was appointed Technical Adviser to the Board of Agriculture.

Yet another example of the way in which Thiselton-Dyer exerted his influence, personal as well as official, unweariedly and with great effect for the expansion of Botanical Science in this country, is afforded by his action when the question of founding the "Annals of Botany" was being considered by a small committee of botanists in 1887. The proposal was on the point of being dropped, but Thiselton-Dyer, with his power of vision, succeeded in inducing the committee to proceed with the project in spite of the many apparent difficulties, and his action at that time has been more than justified.

Turning now to Kew itself, it should be recalled that up to the year 1903, the Gardens had been administered by H.M. Office of Works, but in this year, at the instance of the Board of

Agriculture, the administration was transferred to the latter Department by Order in Council. A condition of the Treasury assent to the transfer was the preservation to the Foreign Office, Colonial Office and India Office, of the right of direct correspondence with Kew.

The main lines of Thiselton-Dyer's work are well summarised in the following Address which was presented to him on his retirement :—*

" On the occasion of your retirement from the position of Director, we, the undersigned, members of the Staff of the Royal Botanic Gardens, Kew, desire to express our regret at the severance of the ties which have so long united us and to convey to you our wish that you may be granted health to enjoy for many years the leisure so well earned by your long and strenuous career.

" During the thirty years of your connection with Kew the establishment has undergone many great improvements and extensions mainly due to your persistent efforts. Not the least of these improvements is the beautifying of the Gardens by opening vistas in the woods and by extensive planting throughout the grounds of masses of ornamental shrubs and herbaceous plants.

" Almost every glass-house has been rebuilt on more attractive lines and the completion of the Temperate House was an achievement that marks an epoch. It may be added that the collections of living plants were never richer and never in better condition.

" The Jodrell Laboratory was arranged and equipped, and for a long time worked, under your personal supervision.

" The Herbarium buildings have been greatly extended, and the collections and library are now second to none in the world.

" The Museum buildings have also been enlarged and modified and the collections rearranged under your direction.

" We members of the permanent staff have much cause to be grateful to you for obtaining a favourable revision of our salaries.

" But it is not your work at Kew alone to which we can refer with satisfaction and admiration. The British Colonies and Possessions in all parts of the world are more or less indebted to you for direct aid and for the foundation or support of their Botanical Establishments.

" We also realise the fact that your close devotion to administrative and executive work has limited your opportunities for original research—a great sacrifice to one whom we are proud to name as the pioneer in this country of modern botanical teaching. Your laboratory classes at South Kensington in the seventies were the first of their kind in England, we believe, and have not been surpassed. Since those days you have exercised a powerful influence in the promotion of Biological Research. The successful career of the Annals of Botany is largely due to your energy, when others hesitated ; and the founding of Section K of the British Association was entirely your own work."

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*See *K.B.* 1905, p. 62, where the names of the signatories are given.

The beautifying of the Gardens by the removal of trees in order to open up vistas and produce broad and pleasing effects was always a matter to which Thiselton-Dyer devoted much time and care. He supervised every alteration and attended to the smallest detail, whether it might be the mode of pruning of a particular tree or the planning of some larger alteration, the ultimate effect of which he had exactly visualised long before the work had been put in hand. He was a real artist in landscape gardening, and the spacious effects of Kew to-day are, in the main, due to his vision and artistic skill, which enabled him to produce noble landscape effects, which have all the charm of appearing perfectly natural.

It was also thanks to his appreciation of the effectiveness of bold masses of colour that the groups of Forsythias, Berberis and other flowering shrubs and herbaceous plants were placed in the Arboretum. The Azalea garden also was greatly developed and improved during his Directorate. A considerable area near Kew Palace, including the Palace Lawn, was added to the Gardens, and, by the removal of the old Palace Stables and other buildings, he greatly improved the amenities at this end of the Gardens. The Bamboo Garden was made, and also the Rose dell near the Pagoda and the Lily Pond. The Rock Garden was designed by Thiselton-Dyer on the plan of a Pyrenean dry valley, and its construction was carried out under his supervision, while in 1887 he added greatly to the growing interest in Rock Garden plants by the provision of the Alpine House, then quite a novel department in the culture and display of Alpine plants. It is unnecessary here to give particulars from the Archives of all that he was able to achieve in the way of Greenhouse rebuilding and additions, but the completion in 1899 of the Temperate House or Winter Garden, which had been left unfinished since 1862*, and the rebuilding of the Succulent House were among the more important events. In the Private or Nursery grounds, nearly all the glasshouses were remodelled or entirely rebuilt, and all the toolsheds and stores were replanned and careful regulations were drawn up to ensure methodical arrangement and a proper care of the tools.

The building of the Jodrell Laboratory, through the munificence of Mr. Phillips Jodrell on Thiselton-Dyer's suggestion, was a natural development for Kew when its Director was imbued with so intense a feeling for the living plant. It was in fact the obvious need of a Botanic Garden, where every opportunity is afforded to the botanical student to prosecute researches among the plants from every clime which are gathered together in the open or under glass. More particularly must this need have been felt by Dyer after his earlier efforts in botanical teaching when, like Huxley for Zoology, he revolutionised the old academic methods.

For many years he supervised the Laboratory himself and paid frequent visits to those carrying out their researches in the building.

*See *K.B.* 1914, pp. 298 and 393.

" Here," as Professor F. O. Bower, F.R.S., a former worker there, writes, " a long succession of workers young and old have carried out research and the writer gladly acknowledges the frequent stimulus and suggestion let fall perhaps in a single sentence, seemingly by accident rather than set design, that came to him from Dyer in his frequent visits to the Laboratory."

The Herbarium had been extended in 1877 under Sir Joseph Hooker, but so great were the accessions, due to the place Kew was taking as the centre for the Botanical work of the Empire, and the interest in floristic work which Thiselton-Dyer had brought about, that the new wing had to be built in 1902. This more than doubled the size of the Herbarium and very largely extended the accommodation for the Library.

Another matter, somewhat trivial though it may now seem, the value of which, however, has borne the test of time, was the conversion of the uniformed attendants at Kew into an efficient corps of Constables under a Sergeant. Since the safety of the collections and the comfort of the visitors so largely depends on the efficiency and courtesy of this body of men, the discipline he introduced has greatly added to their usefulness. As in all matters of this kind, he closely associated himself with his staff and was made " Inspector of Constables," which title is still borne by the Director, and he wore the Constable's uniform when making his official round of the Gardens.

Something has been said about Thiselton-Dyer as a Botanist, but reference must be made to his interest in and deep knowledge of the Classics, which can be traced back to his early days at Oxford. It was after his retirement that he was able to pursue his keen interest in the identification of Classical plants, and, with his wide knowledge of ancient Botany and of Classical literature, his contributions to Liddell and Scott's Lexicon, to the " Companions to Latin and Greek Studies " and to the Journal of Philology, though representing but little of his great store of knowledge, mark him as a scholar worthy of his University.

Turning now to his earlier years, Thiselton-Dyer was born in Westminster on July 28th, 1843, and no doubt inherited some of his scientific tastes from his father, Dr. W. G. Thiselton Dyer. His education commenced at King's College School, where the late Dr. Henry Trimen was one of his contemporaries and with whom he used to go on botanical excursions around London. He then went to King's College, London, intending, like Trimen, to study Medicine —he became a ' member by apprenticeship ' of the Society of Apothecaries—but, changing his plans at the age of twenty, he went up to Oxford and entered Christchurch as a Junior Student. He took his degree in Mathematics, an achievement of which he was justly proud, and followed this distinction by being placed in the first class of the final school of Natural Science in 1867.

In 1868 he was appointed Professor of Natural History at the Royal Agricultural College, Cirencester, where Dr. A. H. Church

was Professor of Chemistry, and with him prepared an edition of Professor S. H. Johnson's book "How Crops Grow," adapted to English conditions. The friendship between Thiselton-Dyer and Church was life-long and resulted in many gifts to Kew and much valuable help from that eminent Chemist, who was also keenly interested in botanical matters.

The early friendship with Trimen was also a lasting one, and one of its first fruits was the "Flora of Middlesex" commenced by them in 1866 and published in 1869.

In 1870 Thiselton-Dyer, after taking his London B.Sc. degree, was appointed Professor of Botany in the Royal College of Science, Dublin, where from the Syllabus of his course of lectures it may be seen he was already striking out an entirely new line in botanical teaching.

Returning to London in 1872 he was appointed Professor of Botany to the Royal Horticultural Society, and it was then he came in touch with Kew and with Huxley, who was Professor of Biology in the Royal College of Science. It was in this year that Huxley organised his memorable course in Elementary Biology at South Kensington, with Thiselton-Dyer as one of his demonstrators. Dyer tells something of the story in his Presidential Address to Section K at Ipswich in 1895.

In 1873 Huxley, being abroad through ill-health, requested Thiselton-Dyer to arrange a course of Instruction for Science Teachers on similar lines for the vegetable kingdom. This Course was held under the auspices of the Science and Art Department, and he gave courses of the same character to Science Teachers in 1874, 1875, 1876 and again in 1880. For the course in 1875 (Professor) S. H. Vines was his Assistant, and for the 1876 course (Professor) Vines and the late (Professor) H. Marshall Ward, who had attended the course as a student in 1875, acted as demonstrators. It may be mentioned in passing, that it was due to this association of Vines, then an Undergraduate at Christ's College, Cambridge, and shortly after a member of the Botany School Staff, that the new and revolutionary Botanical teaching—as it then seemed—was duly inaugurated at Cambridge. Dyer's course was the starting point of a new movement in Botany, a renascence of Henfrey's effort of twenty years before of the study of plants as living organisms and not as dried Herbarium specimens.

A permanent outcome of these lectures and demonstrations is to be found in the "Course of Practical Instruction in Botany" by Bower and Vines; Part I, with a preface by Thiselton-Dyer, being published in 1885, and Part II in 1887.* This was originally intended by Thiselton-Dyer to be a manual of the teaching he had given in his South Kensington course with outlines of his lectures and illustrations. Owing to his work at Kew as Assistant Director,

*A second complete edition, including both parts, was published by Prof. F. O. Bower in 1888.

however, he was not able to give much time to the book, though he supervised the preparation of the illustrations which were drawn by Vines at Kew. Unfortunately they were never reproduced in the book.

Another memorable event in Thiselton-Dyer's early botanical career was the influence exerted on him by the publication of Sachs' "Text Book of Botany," and his collaboration with A. W. Bennett in the translation of the first edition, which was published in 1874.

In 1875, as has been already recorded, Sir Joseph Hooker succeeded in getting the office of Assistant Director revived, and selected Thiselton-Dyer to fill the post to which he was appointed on June 12th, 1875.

On June 23rd, 1877, he married Harriet Ann, the eldest daughter of Sir Joseph Hooker, who fully shared her husband's botanical interests, and, being a skilled artist, enriched the Kew collection of drawings in addition to giving assistance with the drawings for the Botanical Magazine.

On the occasion of his 80th birthday on July 28th, 1923, Sir William received a congratulatory address from all the leading Botanists in Great Britain and Ireland (*see* "Nature," August 4th, 1923, p. 182), and on June 23rd, 1927, Sir William and Lady Thiselton-Dyer celebrated their Golden Wedding (*see* "Nature," July 30th, 1927, p. 162).

Sir William, after his retirement, interested himself in County matters in Gloucestershire, becoming a Justice of the Peace, and he also served on the County Education Committee as the representative of Oxford University, and was a member of the Court of the University of Bristol.

He was a constant correspondent with Kew almost to the end of his life, and his letters show the same unfailing interest in botanical affairs as had marked the days of his official career.

The funeral took place at Witcombe, Gloucester, on December 27th, 1928, and was attended by the Director.

In conclusion it seems fitting to publish here the minute he sent to the Secretary of the Board of Agriculture on his retirement in December, 1905, as it sets out very clearly the more important developments which were effected under his Directorship :—

Secretary,

It now only remains for me, before handing over my charge to my successor, to take leave of the Board in my capacity as Director, though I shall still have the honour of serving under it as Technical Adviser in Botany till the end of the financial year.

I suppose it does not always fall to the lot of an official to lay down the office entrusted to him with more entire satisfaction as to his past relations with his official superiors or more contentment with the state of efficiency of the establishment of which he relinquishes the control.

I think I am justified in saying that Kew never stood higher in public esteem or received higher recognition throughout the empire and I may add the civilised world.

The annual attendance of visitors bears witness to the one; the constant recourse to the establishment for purposes of research by foreigners of all nationalities, to the other.

During the period of my Directorate much has been effected to improve the working and organisation of the establishment. I have been fortunate in securing the confidence of the Treasury and the necessary funds have been not illiberally placed at my disposal. I leave the establishment, with some small exceptions which no doubt will be shortly dealt with, in a thoroughly efficient state and well supplied with the appliances demanded by modern horticultural art.

I may summarise a few notable changes and improvements :—

Obstructive fences have been removed with the sanction of the Crown.

Grass drives facilitating the movements of large crowds have been driven through the woods, and sylvan scenery of great beauty has been made accessible.

The national arboretum first projected in 1846 has been steadily developed and is now without a rival at home and probably abroad.

A refreshment Pavilion has been provided which adds enormously to the comfort of our visitors.

The sanitary arrangements throughout the establishment have been progressively rebuilt.

Commodious mess-rooms have been provided for the labourers.

The great Temperate House, commenced in 1861, was finally completed in 1899.

The minor glass-houses have been mostly reconstructed on modern principles.

The working appliances have been greatly improved with manifest benefit to the health of the men, and a fine reading-room and commodious lecture-room have been provided for the young gardeners.

The advanced horticultural school has been greatly developed. Ten official appointments in the Colonies and India have been made from it during the past year. The experiment was tried with perfect success of throwing the school open to women and was only discontinued when the establishment of outside Horticultural Colleges supplied their needs.

Two Surrey County scholars from the elementary schools of the Borough are now admitted annually for training in horticulture.

The Museums have been thoroughly reorganised and enlarged. They are in constant request in the solution of commercial enquiries and are undoubtedly unique.

The Herbarium, by far the most extensive and best organised in the world, has been enlarged and made fire-proof.

As regards colonial work an active part has been taken in the economic development of West Africa by means of the establishment of Botanic Stations. The rubber export from the Gold Coast sprang from nothing in 1882 to a value of more than half a million pounds in 1898 owing to the identification of a rubber plant at Kew. That of Cocoa was £4 in 1892, rising in 1904 to over £200,000. This has been accomplished under Kew guidance by an officer trained at Kew.

Para rubber introduced into our Eastern Colonies in 1876 has now given rise to a planting industry the limit of which can hardly be foreseen.

Sir Daniel Morris, the late Assistant Director, has organised with great success a Department of Agriculture in the West Indies.

Of the *Kew Bulletin* (temporarily in abeyance) some 18 volumes have been issued covering information of every kind in relation to Tropical Agriculture. The contents have been widely diffused by reproduction in Colonial and Indian journals.

As regards home agriculture the Board's publications have been systematically revised, and at no distant date plain information on every malady of crops amenable to treatment will be available for farmers.

On the scientific side the output of work has been large. I have seen, under the editorship of my predecessor and with the aid of the staff, the completion of the Flora of British India (7 volumes). An Enumeration of the Plants of China (3 vols.) has been completed. Under my own personal editorship the voluminous Floras of Tropical Africa and South Africa have made continuous progress. Lastly the vast Index Kewensis enumerating the names and bibliography of all known plants has been elaborated at Kew, and is an indispensable authority in every botanical establishment in the world.

I will not extend this brief summary into greater detail. I will only add that in my successor the Board is fortunate in securing a Director of scientific distinction and tried administrative capacity into whose hands I resign my task with perfect confidence.

W. T. T.-D.,

December 15th, 1905.

XIV.—NOTES ON TRINIDAD PLANTS. N. Y. Sandwith.

In the course of checking the manuscripts of the new Flora of Trinidad and Tobago, which is now being issued in parts* by the Department of Agriculture of those islands with the collaboration of Kew, it is natural that questions of taxonomic interest to students of the flora of this and neighbouring regions of Tropical America should constantly arise, and it is thought that some of these may be worthy of record from time to time. The following notes refer to

*Vol. i, Part I, pp. 1–22 (Ranales), and Vol. ii, Part I, pp. 1–48 (Rubiales), both published in August, 1928.

the most important and difficult points that have been dealt with recently.

1. **Rinorea in Trinidad.** Two species of this genus are found in Trinidad, and as both have been recently confused and misinterpreted, it may be of interest to give some account of them. When Dr. S. F. Blake published his careful revision of Tropical American *Rinoreae* in 1924, he was greatly handicapped by not seeing two very important types, that of *Riana guianensis* Aubl. which is the basis of *Conohorea Riana* DC. and of *Rinorea Riana* Kuntze, and that of *Alsodeia Lindeniana* Tul. (*Rinorea Lindeniana* Kuntze). Thus for his identification of *R. Riana* he relied upon information and a sketch of Aublet's type which were supplied by the British Museum, while his conception of *R. Lindeniana* was derived from reading Tulasne's description, which unfortunately contains two serious inaccuracies in what perhaps appeared at the time to be small details of little importance. A careful examination of Aublet's type of *Riana guianensis* and of the type collection of *R. Lindeniana*, as well as of a large amount of Guiana material of *Rinorea* which Dr. Blake was unable to see in America, proves the following facts :—

(a). Blake's *R. Riana* (DC.) Kuntze of Colombia, Venezuela and Trinidad, a plant with small flowers in compound racemes and with the style strongly bent at the base, is *R. Lindeniana* (Tul.) Kuntze. This identification is incidentally confirmed by Melchior in his recent treatment in the Pflanzenfamilien (2 Aufl. 21, p. 352, 1925).

(b). There was no necessity for Blake to separate *Lindeniana* as something distinct from his *Riana*. The type collection of *Alsodeia Lindeniana* (*Linden* 247), while agreeing in all other respects with Tulasne's description, has the axis of the inflorescence definitely pubescent under a lens (*not* glabrous, the character used by Blake in his key), and the free part of the staminal gland is longer than would be assumed from Tulasne's words. *Linden* 247, in fact, agrees exactly in foliage, inflorescence and floral-dissections with Blake's description of *Riana* and with a Trinidad plant (*Dannouse* 6421) which he cites under that and of which there is a sheet at Kew.

(c). Blake never saw any specimens of the true *Rinorea Riana* (DC.) Kuntze, which is a totally different plant occurring in Trinidad, where its range meets that of *R. Lindeniana*, in Eastern Venezuela, and above all in the three Guianas where it is plentiful. A very large series of specimens from Guiana in the Kew Herbarium agree perfectly with Aublet's type of *Riana guianensis* in all details, but none of these specimens are cited by Dr. Blake, and hence the true *R. Riana* finds no place whatever in his revision. This misinterpretation of *R. Riana* has been incorporated by R. Knuth in his Initia Florae Venezuelensis.

(d). The plant which is mentioned by Grisebach in the Flora of the British West Indies as occurring in Trinidad, under the name *Alsodeia flavescens* Spr., is *R. Riana*. Crueger's collection, cited by

Grisebach, is represented at Kew, and though the flowers are immature, it obviously agrees with the true *Riana*. *R. flavescens* (Aubl.) Kuntze is, of course, a quite different species with a glabrous ovary. The occurrence of these two species, *R. Riana* and *R. Lindeniana*, in Trinidad and even in the same locality (Arima) is of great interest.

R. Riana and *R. Lindeniana* differ remarkably in almost innumerable points. Besides the more obvious and important distinctions in the character of the inflorescence, the size of the flowers and the shape of the style, the following have been verified from an examination of numerous specimens and dissections: the leaves of the two species are at once distinguishable both by the length of the acumen and by their shape at the base; the inflorescence dries a different colour in each; the buds have a different shape; the sepals have a different shape and different measurements; the dimensions of the petals are different; the stamens differ in nearly every detail possible, except in the length of the filament; and the styles differ in length as well as in shape. The following is a summary of the important distinguishing characters of both species, with their synonymy and distribution:—

Rinorea Lindeniana (*Tul.*) *Kuntze*, Rev. Gen. i. 42 (1891). *R. Riana* Blake in Contr. U.S. Nat. Herb. xx. 503, t. 32 (1924), non (DC.) Kuntze. *Alsodeia Lindeniana* Tul. in Ann. Sci. Nat. sér. iii. 7. 364 (1847). *A. guianensis* var. *Lindeniana* Eichl. in Mart. Fl. Bras. xiii. pars i, 387 (1871).

Leaves elliptic-oblong to oval-oblong, the acumen shorter than in *R. Riana* and rarely up to 1·5 cm. long, oblique at the base and at least one of the margins rounded or even cordate into the petiole (cf. Blake's figure), less strongly reticulate on both sides than those of *R. Riana*; petiole 3–5 mm. long. *Inflorescence* compound-racemose, the flowers drying a rather light brown, the buds small, ovate and obtuse. *Sepals* obtuse, not conspicuously ribbed on the back, 1–1·5 mm. long. *Petals* glabrous or rarely very minutely ciliolate in the lower half, up to 3 or rarely 3·5 mm. long, often shorter. *Stamens* up to 2·2 mm. long; filament about 0·5 mm. long, the free part of the gland as thick as the filament, 0·5–0·7 mm. long; anther ovate, as broad as the connective-scale, 1–1·2 mm. long; connective-scale 1·5–1·8 mm. long. *Style* strongly bent at the base, up to 1·5 mm. long.

TRINIDAD: Maracas, 1900, *Dannouse* 6421; Arima, 1904, *McLean*. Blake (l.c.504) adds another locality.

VENEZUELA: Truxillo, Merida, *Linden* 247 of 1842 (type coll.). Blake gives several other localities.

COLOMBIA: various localities given by Blake (l.c.).

Rinorea Riana (*DC.*) *Kuntze*, l.c. non Blake, l.c. *Riana guianensis* Aubl. Pl. Guian. i. 237, t. 94 (1775), not *Rinorea guianensis* Aubl. (1775). *Conohorea Riana* DC. Prodr. i. 312 (1824). *Alsodeia*

prunifolia Spreng. Syst. i. 807 (1825). *A. guianensis* Eichl. in Mart. Fl. Bras. xiii. pars i, 387 (1871), partim. *A. flavescens* Griseb. Fl. Brit. W. Indies, 26 (1864), not *Conohorea flavescens* Aubl.

Leaves ovate-elliptic to elliptic-oblong, long-acuminate with the acumen at least 2 cm. long, acutely cuneate at the base and attenuate to the petiole, not oblique, reticulate on both sides but especially beneath; petiole 5–7 mm. long. *Inflorescence* simply racemose, the flowers conspicuously pedicellate and drying a dark brownish-chocolate, the buds normally ovate-lanceolate and sharply acute. *Sepals* acute or cuspidate, strongly and conspicuously ribbed on the back, 1·5–2 mm. long. *Petals* regularly ciliolate, especially in the lower half when mature, normally 4–5 mm. long. *Stamens* about 3 mm. long; filament about 0·5 mm. long, the free part of the gland thinner and shorter than the filament, rarely up to 0·4 mm. long; anther oblong-linear, 1·6–2 mm. long, narrower than the connective-scale; connective-scale usually 2·5 mm. long. *Style* straight, 2·2–2·5 mm. long.

Trinidad: Arima, February 1846, *Crueger*.

Venezuela: Eleanor Creek, Lower Orinoco, *Rusby and Squires* 129 (not cited by Blake).

British Guiana: Essequibo, *Hancock*; wet lowland forest, Tumatumari, *Gleason* 9; dense upland forest, Tumatumari, *Gleason* 391.

Surinam: *Hostmann* 243, 1126; *Splitgerber*, sine numero.

French Guiana: *Aublet* (type in Herb. Mus. Brit.); *Poiteau*; Karouany, *Sagot* 33; *Melinon* 41 (1854); *Martin*.

It may be added that the remaining Guiana material of this genus, besides containing some undescribed species, presents problems of taxonomy and nomenclature which will prove of considerable difficulty to future students of that flora.

2. **Xylosma Seemanni** *Triana et Planch.* in Ann. Sci. Nat. sér. iv. 17. 99 (1862). As has been suspected by Britton and by Urban (Engl. Bot. Jahrb. xv. 299), the Trinidad plant which was referred by Grisebach to *X. nitidum* A. Gr. ex Griseb. and has for long been passing under that name, is distinct from the true *nitidum* of Jamaica. A series of sheets of both has been examined, and the Jamaican plant has been found to differ in the finer leaf-serration, the much weaker reticulation of the upper surface, and the different direction and anastomosing of the lateral veins, but above all in the sepals, which are conspicuously and regularly ciliate, and pubescent within over the whole surface; whereas the sepals of the Trinidad plant are veined and glabrous on both sides and on the margins except for a tuft of hairs and some weak ciliation near the apex. On the other hand, the Trinidad plant does agree remarkably well in these very points with the type collections of *X. Seemanni* Tr. & Pl. from Panama. Triana and Planchon themselves did not think Purdie's plant from Trinidad was quite the same as their species (they gave no reasons), but no serious discrepancy could be

discovered between them on a recent examination, and they both share the numerous characters which distinguish them from *X. nitidum* of Jamaica. The type collections of *Seemanni* were unarmed, and so are two Trinidad sheets in the Kew Herbarium, though others bear conspicuous spines. It is clear that a revision of this genus may show that *Seemanni* itself can be identified with some earlier described species from Central or Northern South America, but pending such a critical and lengthy investigation no better name can be given to the plant which grows in Trinidad.

3. **Elsota tenuifolia** (*Chodat*) *Sandwith* comb. nov. *Securidaca tenuifolia* Chodat in Bull. Herb. Boiss. 3. 545 (1895). *Elsota coriacea* (Bonpl.) Blake in N. Am. Fl. 25, 374 (1924). *E. chrysotricha* Riley in Kew. Bull. 1927, 119. The late Mr. L. A. M. Riley gave reasons for rejecting Blake's combination *E. coriacea* (Bonpland) for the plant of Trinidad and Panama, and described it under the new name *E. chrysotricha*. This, however, proves to have been unnecessary, for Chodat had already described the Trinidad plant as *Securidaca tenuifolia* so long ago as 1895. The types of *S. tenuifolia* and its form *velutina* have been borrowed from Berlin, and they cannot be distinguished specifically from the collections cited by Riley.

4. **Simaba multiflora** *Juss.* and **S. guianensis** *Aubl.* Here we have an instance of the unfortunate combination of two totally distinct and easily recognised species under one name owing to an author's omission to examine a type specimen and the consequent errors in identification. In the Flora Brasiliensis, Engler applied Aublet's *guianensis* (*Aruba guianensis* and *Simaba guianensis*) to a plant which is widely spread in Guiana and Brazil, and occurs also in Trinidad and St. Vincent. He treated as synonymous with it Jussieu's *multiflora* (with a note of interrogation to indicate uncertainty), and proceeded to divide it into two varieties based on the shape of the leaflets: var. *Schomburgkiana*, with which *S. foetida* Benth. is rightly treated as synonymous, and which he identifies with Aublet's *Aruba guianensis*; and the much rarer var. *angustifolia* (*S. angustifolia* Benth.), under which he places Aublet's *Simaba guianensis*. He has a curious inaccuracy in the citations of *S. foetida* and *S. angustifolia*, which Bentham described from Spruce's material, attributing them to Dalzell, but Dalzell's Contributions to the Botany of Western India is a paper occurring earlier in the same volume of Hooker's Kew Journal of Botany.

There are large series of this plant in the National Herbaria. Its leaves bear 5–9 (very often 7) leaflets which dry a brown or brownish-olive colour and, in the common variety, are obovate in outline, being very shortly but conspicuously cuspidate at the apex, or in some forms rounded-obtuse, or even (*S. foetida* Benth.) slightly emarginate; in the rare var. *angustifolia* the leaflets are narrow and lanceolate. The inflorescence is long, lax and many-

flowered, frequently as long as or even longer than the subtending leaf. The dissection of the flower agrees with that of Jussieu's *multiflora* in the figure which, with the necessary explanatory note, is the basis for that name, and the very name *multiflora* at once suggests the most obvious superficial character for distinguishing this plant from *guianensis*. Jussieu apparently published no normal description, and it is this omission which has doubtless caused all the subsequent confusion. On the same plate there is also a figure of a dissection of the flower of *S. guianensis* Aubl., showing the numerous remarkable points of difference between the two species. It is, therefore, almost inconceivable how, in the first place, Engler could have attempted to unite the two, even in the absence of a description of the leaves of *multiflora*, seeing that their floral parts are so carefully and deliberately differentiated by Jussieu ; and secondly, how he could possibly identify this plant with Aublet's figures of *Simaba guianensis* and *Aruba guianensis*. Aublet's figures are often admittedly imperfect, but they could hardly be as wide of the mark as is necessitated by this identification. On examination, the Aublet types at the British Museum prove to be very like his figures, in fact to represent a species which bears no resemblance whatever to Engler's plant, which is without doubt *S. multiflora* Juss. The leaves of Aublet's *guianensis* (both *Aruba* and *Simaba*) bear only 3–5 larger, relatively narrower and more elliptic, olive-green leaflets, which are attenuate at the apex into a conspicuous emarginate acumen. The inflorescence is extremely short and congested, often barely longer than the subtending petiole ; while a glance at Jussieu's figures will suffice to show how different is the floral structure from that of *multiflora*. This species is far more local than the other and is apparently confined to French Guiana (Aublet ! L. C. Richard in Herb. Forsyth !). Jussieu's figure of the flower was based on L. C. Richard's own designs and manuscript, and the foliage of Richard's specimens agrees with Aublet's types which, unfortunately, bear no detachable flowers, but his pictures show that his inflorescences were exactly similar. It may be added that, although Aublet's specimens are so poor, there can be little doubt that Engler was right in believing that *Simaba guianensis* and *Aruba guianensis* represent one and the same species.

A third species, *S. cuspidata*, is closely related to *guianensis*. It was described by Engler from material collected by Spruce at the mouth of the Rio Negro, Brazil, and specimens collected by Splitgerber in Dutch Guiana are cited under it. There is a sheet of the Splitgerber gathering at Kew, and it agrees very well with the Spruce type except in the length of the style, which is much shorter. *S. cuspidata* appears to differ from *S. guianensis* both in foliage and floral characters ; but it is possible that further collections of *guianensis* will prove to be intermediate.

Meanwhile the West Indian *multiflora* was confused by Grisebach with the Venezuelan *S. orinocensis* H.B.K., a species

which clearly differs both in its glabrous gynophore and its fruit. Engler placed the St. Vincent plant under the var. *angustifolia* of his *guianensis*, but it agrees very much better with the commoner var. *Schomburgkiana*. The species of *Simaba* which grows in St. Vincent and Trinidad is, in fact, *S. multiflora* Juss., and there is no necessity for retaining the name *Schomburgkiana* unless the trinomial method be adopted. Even in the absence of evidence as to the shape of the leaflets, it is fairly certain that Jussieu's plant must have been the ordinary form of the West Indies, Guiana and Amazonian Brazil. *Angustifolia*, which probably deserves to rank as a good variety, appears to have been collected only once.

The references of these two confused species are as follows :—

(1). **Simaba multiflora** *Juss.* in Mem. Mus. Par. xii. 539, pl. 27, f. 45a (1825). *S. guianensis* (Aubl.) Engl. in Mart. Fl. Bras. xii. pars ii. 211 (1872-7), non *Simaba guianensis* Aubl, nec *Aruba guianensis* Aubl.

var. α. *Schomburgkiana* (Engl. l.c. 212, sub *S. guianensis*). *S. foetida* Benth. in Hook. Kew. Journ. iii. 350 (1851). *S. orinocensis* Griseb. Fl. Brit. W. Indies, 139 (1859), non H.B.K. *Aruba guianensis* Engl. non Aubl.

var. β. *angustifolia* (Spruce ex Engl. l.c., sub *S. guianensis*). *S. angustifolia* Benth. l.c. *S. guianensis* Engl. non Aubl.

(2). **Simaba guianensis** *Aubl.* Pl. Guian. i. 400, t. 153 (1775) ; Juss. l.c. 539, pl. 27, t. 45b. *Aruba guianensis* Aubl. Pl. Guian. i. 293, t. 115 (1775). The generic name *Aruba*, though occurring earlier in the same volume of Aublet, was rejected by authors in favour of *Simaba*.

XV.—THE BOTANICAL NAME OF THE SUGAR MAPLE.

T. A. Sprague.

The name *Acer saccharum* Marsh. was adopted for the Sugar Maple by Trelease in Rep. Miss. Bot. Gard. v. 93 (1894), and has been used in Engl. Pflanzenr. Acerac. 74 (1902), Gray's New Man. Bot. ed. 7, 558 (1908), C. K. Schneider, Ill. Handb. Laubholzk. ii. 243 (1909), Britton and Brown, Ill. Fl. ed. 2, ii, 496 (1913), Bean, Trees and Shrubs hardy in the British Isles, ed. 3, i, 158 (1921), Sarg. Man. Trees N. Am. ed. 2, 688 (1922), Rehder, Man. Cult. Trees and Shrubs, 565 (1927), and Sudworth, Check List For. Trees U.S. 187 (1927) : in other words it has been generally accepted by critical botanists of different schools as the correct name for the Sugar Maple for the last thirty years and more. Consequently it should not be lightly abandoned.

Mr. K. K. Mackenzie has recently stated (Rhodora, xxviii. 111 : June 1926) that " Marshall never published any such species. The name ' *Acer saccharum* ' does, it is true, appear as cited, but this was merely a typographical error for *Acer saccharinum* L. In the revised French edition of Marshall's work (Catalogue alphabétique des

Arbres et Arbrisseaux), which appeared in 1788, the error was corrected (p. 4), and the full citation '*Acer saccharinum* Linn.' was given in place of '*Acer saccharum*.' The use of the fictitious name '*Acer saccharum* Marsh.' should of course be abandoned."

The name *Acer saccharum* was published by Marshall in his 'Arbustrum americanum' p. 4 (1785). There is no evidence that it was a typographical error, nor is there any evidence that Marshall had anything to do with the French translation published in Paris in 1788 by Lézermes. Indeed, judging by the translator's preface, the footnote on p. iv, Lézerme's remarks on oaks (p. 198), and other passages, it seems fairly obvious that Marshall was not responsible in any way for the text of the French edition. The fact that Lézerme replaced the name "*Acer saccharum*," employed by Marshall, by "*Acer saccharinum* Linn.", is not evidence that Marshall intended to use the latter name.

The Rules of Nomenclature take cognizance only of established facts, and it is a fact that Marshall, in 1785, published the name *Acer saccharum* for the Sugar Maple.

It is possible that Marshall's "*Acer saccharum*" may have been a typographical error for "*Acer saccharinum*" or alternatively an amended spelling of that name, but this has not been proved, and in the absence of definite proof, Marshall's *Acer saccharum* stands as the correct name for the Sugar Maple.

XVI.—ENGELMANNIA AND ANGELANDRA.

T. A. Sprague.

Three different genera were named in honour of Dr. George Engelmann of St. Louis, Missouri, namely: *Engelmannia* Klotzsch in Wiegm. Archiv. vii. 253 (1841), Euphorbiaceae; *Engelmannia* Torr. et Gray, Fl. N. Am. ii. 283 (1842), Compositae; and *Engelmannia* Pfeiffer in Bot. Zeit. iii. 673 (1845), Convolvulaceae. To add to the confusion, two of them were re-named *Angelandra* by Endlicher. *Engelmannia* Klotzsch is now included under the genus *Croton*, as a section, *Angelandra* Muell. Arg., while *Engelmannia* Pfeiffer has been re-united with the genus *Cuscuta*, from which it was originally segregated. *Engelmannia* Torr. et Gray, on the other hand, has been generally adopted, as for example in A. Gray, Synoptical Flora (1884), Small, Fl. Southeastern United States, ed. 2 (1913), and Britton and Brown's Illustrated Flora, ed. 2 (1913), as well as in Bentham et Hooker, Genera Plantarum (1873), Engler et Prantl, Nat. Pflanzenfam. (1890), Post et Kuntze, Lexicon Generum Phanerogamarum (1903), and Dalla Torre et Harms, Genera Siphonogamarum (1905). It is nevertheless an invalid name, both under the International Rules of Nomenclature and under the American Code.

The various authors who have adopted *Engelmannia* Torr. et Gray have done so under the mistaken impression that it was published in 1841, and that there was no evidence that it was antedated by *Engelmannia* Klotzsch. According to the late Dr. B. Daydon Jackson, however, volume ii. part 2, of Torrey and Gray's Flora, comprising pp. 185-392, appeared in April, 1842 (*vide* Journ. Bot. 1893, 298). *Engelmannia* Torr. et Gray is therefore antedated by the valid name *Engelmannia* Klotzsch (1841), and is consequently invalid under Art. 51, 2, of the International Rules. It follows that it should be called *Angelandra* Endl. The synonymy of two of the three groups concerned is given below: the third, *Engelmannia*, Pfeiffer, is universally treated as a synonym of *Cuscuta*.

Angelandra *Endl.* Gen. Suppl. iii. 69 (1843); Walp. Rep. ii. 605, 976 (1843), et op. cit. vi. 149 (1846-47). *Engelmannia* Torr. et Gray, Fl. N. Am. ii. 283 (1842), non Klotzsch (1841).—A monotypic genus of Compositae-Heliantheae, occurring in the Southern United States and Mexico. If it is desired to retain the comparatively well-known name *Engelmannia* Torr. et Gray, it will be necessary to conserve it. In view of the fact that the genus is monotypic this seems hardly worth while, especially since *Engelmannia* Klotzsch might at any time be revived as an independent genus.

Croton, sect. **Angelandra** *Muell. Arg.* in Linnaea, xxxiv. 79 (1865-66). *Engelmannia* Klotzsch in Wiegm. Archiv, vii. 253 (1841). *Angelandra* Endl. Gen. Suppl. iv. pars 3, 91 (1850), non Endl. (1843). —A ditypic section of *Croton* (Euphorbiaceae), confined to North America. In the event of its being raised again to generic rank, it would bear the name *Engelmannia* Klotzsch.

XVII.—NOTES ON AFRICAN GRASSES, IX.*

Some Saline-loving Grasses occurring in South Africa.
C. A. Smith & C. E. Hubbard.

Whilst making a botanical survey of the Fauresmith Division in the Orange Free State, one of us collected specimens of two species of *Puccinellia* (*Atropis*) growing in strongly saline areas. One of these proved on examination to be *Puccinellia angusta* (Nees) Smith et Hubbard, represented at Kew by only one specimen collected by Ecklon, about one hundred years ago, in saline places by the Zwartkops River in the Uitenhage Division of the Cape Province, while the other is a new species, which is described below as *Puccinellia acroxantha*.

The specimens of *Puccinellia angusta* were collected during August 1927, in a very saline area (a little less than one acre in size) in a garden of the farm " Bakbank " ; the locality having an altitude of about 4500 ft., and a mean annual (summer) rainfall of about 15 in. The site was covered some 4 or 5 years ago by a heavy crop of *Medicago sativa* L. (Lucerne), but due to wrong irrigation practices, such as

*Continued from *K.B.* 1929, p. 31.

continual irrigation from sources already containing Sodium and other metallic salts (sulphates, chlorides, etc.) in solution, the soil has become saturated with these salts. On account of the shallow-lying " hardbank " (the so-called hard-pan) and continual evaporation under the influence of the sun's heat, capillary action draws large quantities of the salts in solution to the surface where they are deposited, giving the white powdery surface known to the farming community as " brak." During the spring rains (from September onwards) the area becomes flooded for a comparatively short period and the saline deposit disappears, only to reappear more intensely again from about June to August—the winter months. Isolated Lucerne plants continued to flourish for a season or two, but eventually they completely disappeared, leaving the bare area which seemed useless from the point of view of profitable cultivation. It was interesting to note the migration to the higher and therefore less brackish part of the area, of *Picris echioides* L., an alien, and *Lactuca dregeana* DC., an indigenous " weed " which becomes a nuisance, particularly in gardens. Neither of these plants, however, has succeeded in penetrating to the lower lying more brackish areas.

During a visit to the " Bakbank " farm in the company of Mr. W. A. Rabie, who is in charge of the Fauresmith Botanical Reserve, it was arranged with the owner to sow seeds of various " brak bossies " (salinaceous plants) broadcast over the whole area and to watch carefully the outcome of the experiment—the first so far tried in the Union of South Africa with such a heavily saline soil. Accordingly seeds of the following plants were sown, while the brak was still there as a heavy deposit.—*Mesembryanthemum crystallinum* L., *M. geniculiflorum* L., *Galenia sarcophylla* Fenzl, *Atriplex capensis* Moq., *Salsola strobiliformis* C. A. Sm., *Hypertelis verrucosa* Fenzl. The results were highly satisfactory and numerous plants of all kinds appeared early in the following spring. The area was allowed to develop, undisturbed by weeding, grazing, trampling, etc., and the plants were subjected to an endurance test as far the saline nature of the soil was concerned. On the passing of the second growing season, several very important changes were noted. Firstly, the influx of several grasses—*Puccinellia angusta* and *Bromus unioloides* H. B. & K., and along the edge of the brackish area *Bromus japonicus* Thunb., with its var. *velutinus* Aschers & Graebn., appeared. The growth of the first-mentioned was remarkable, even in its early stages. It seemed to improve extraordinarily well towards the beginning of the winter season (June), and by August had attained a very dense, soft and luxuriant growth, being up to 2 ft. high and the tufts up to 6 in. in diameter at the base. Up to this time the grass had never been found growing in the saline areas of the Fauresmith Division. It is remarkable in many other respects, being one of the first plants to appear along enclosed water-furrows (in gardens, for example, where it grows in water) and within the enclosures around newly erected windmills. In addition it has the advantage over all

PLATE IV

Puccinellia angusta Smith et Hubbard, showing dense winter growth in the heavy saline deposits (¾ in. thick). In the background are plants of *Atriplex capensis* Moq.

To face page 85.]

the other indigenous grasses, in being a "winter" grass and a perennial. Its palatability was next determined. Some sheep, in fair condition for that period of the year when the veld yields but poor grazing, were allowed to graze on the area; the result was that the grass was shorn to the ground, only the bases of the tufts being left. As far as is known at present, *Puccinellia angusta* shows every promise of being a valuable forage grass for saline soils. *Bromus unioloides* H. B. & K. is a well-known "winter" grass, and its appearance at that time created no surprise, but its strong vigorous growth under the heavy brackish conditions was an unexpected revelation. *Bromus japonicus* Thunb., being chiefly a summer grass, was then dying off and has no merit as a fodder grass.

Secondly, changes had taken place in the population of the "brack bushes." Of these the first to succumb to the test was the *Galenia* and then the *Hypertelis*. *Mesembryanthemum crystallinum* L., *Atriplex capensis* Moq., and *Salsola strobiliformis* C. A. Sm. were able to stand the test very well.

The experiment is still being continued by Mr. Rabie and its success is due entirely to that gentleman's unflagging zeal in collecting seed and in his subsequent supervision, together with that of the owner of the farm.

An emended description of *Puccinellia angusta* is given below, as additional material shows a considerable range in the size of the culms, leaves and panicles.

Puccinellia angusta (*Nees*) *Smith et Hubbard*, comb. nov. A compact, densely-tufted perennial, with numerous intravaginal innovations. *Culms* erect or spreading and slightly drooping, 30–60 cm. long, slender, smooth, one-noded towards the base, terete above, compressed below, sheathed all along. *Leaves* mostly crowded near the base, short and erect or ascending and at length spreading and becoming recurved, glaucous and glabrous; sheaths smooth, the lower pallid or ultimately brown, membranous and shining, persistent, the uppermost firmer than the lower, exceeding the base of the panicle or with the panicle shortly exserted; ligules ovate or ovate-oblong, acute to obtuse, 2–3 mm. long, membranous, glabrous; blades very narrowly linear, acute, smooth except for the rough margins, 7·5–10 cm. long by 1·5 mm. wide when expanded, setaceously involute and subrigid or up to 30 cm. long by 2·5 mm. wide, flexuous, flat, weak and thin. *Panicle* erect or slightly nodding, linear, contracted, 10–30 cm. long, 1·5–2 cm. wide; rhachis slender, subflexuous above; branches very unequal, ascending, in distant fascicles of about 5, finely filiform to capillary, scaberulous, the shorter 1–3 spiculate, the longest up to 12 cm. long; lateral pedicels 1–4 mm. long, adpressed. *Spikelets* distant by about their own length or loosely imbricate, linear to linear-oblong, 4–5·5 mm. long, 1·5 mm. wide, loosely 3–6-flowered. *Glumes* ovate and obtuse when flattened, herbaceous with broad hyaline margins; lower 1·2–1·8 mm. long, 1–3-nerved; upper 2 mm. long, 3-nerved. *Lemmas* obliquely

oblong in profile, broadly elliptic-oblong and rotundately obtuse when flattened, 2–2·2 mm. long, membranous with hyaline purplish tips, 5-nerved, minutely pubescent below on the middle nerve and the outer side nerves. *Paleas* linear, minutely 2-toothed, keels shortly ciliate. *Anthers* 1 mm. long.—*Sclerochloa angusta* Nees, Fl. Afr. Austr. 381 (1841). *Atropis angusta* Stapf in Dyer, Fl. Cap. vii. 717 (1900).

Cape Province: Uitenhage Division; in saline places by the Zwartkops River, *Ecklon* !

Orange Free State: Fauresmith Division; "Bakbank" farm, in saline area in garden, 1380 m., August, *Smith* 4385 !

The specimen from which Dr. Stapf's description was drawn up bore the label Nieufeld (Nieuwveld), *Drège* 1827, and he believes that the label has been misplaced, and it is really Ecklon's specimen from the Zwartkops River, the type of *Sclerochloa angusta* Nees. It is possible, however, that such a plant may have been collected in the Nieuwveld in the Beaufort West Division by Drège, as this contains similar saline areas to that in which *Smith* 4385 was collected. In addition it is much nearer to the Fauresmith Division than is the Zwartkops River. Meyer in "Plantae Dregeanae" however, does not include *Sclerochloa angusta* Nees as collected by Drège.

The other species, *Puccinellia acroxantha* Smith et Hubbard, is closely allied to *P. angusta*. It differs mainly in having 2-noded culms, firmer basal leaf-sheaths, and spikelets with larger paler lemmas. The specimens were collected on "Karroo-turf" soil of varying salinity, by the side of an eroded ditch periodically flushed with fresh rain water from the hillsides. Here it was growing in association with *Eragrostis* sp., *Lycium oxycladum* Miers, and *Monechma incana* C. B. Cl., the last two well-known on saline areas in the Fauresmith Division. The following is a description of this new species:—

Puccinellia acroxantha *Smith et Hubbard*, sp. nov.; affinis *P. angustae* Smith et Hubbard, sed culmis 2-nodis, vaginis foliorum inferiorum papyraceis, spiculis oblongis vel lanceolato-oblongis, lemmatibus longioribus differt.

A loosely tufted perennial with intravaginal and extravaginal (?) innovations. *Culms* erect or ascending from a short procumbent base rooting at the lowest node, up to 60 cm. high, slender, terete, simple, 2-noded, glabrous and smooth. *Leaves* glabrous, glaucescent; lower sheaths moderately loose, firmly papyraceous, smooth, the upper firmer, finely striate; ligules oblong, obtuse, up to 3·5 mm. long, membranous, glabrous; blades very narrowly linear, loosely convolute, up to 18 cm. long, and about 2 mm. wide when unrolled, erect, slightly flexuous, smooth below, asperulous above. *Panicle* narrow, contracted, 12–20 cm. long, about 1·5 cm. wide, greenish;

rhachis glabrous, more or less asperulous ; internodes up to 4·5 mm. long ; branches very unequal, densely clustered, some very short and one-spiculate, others up to 5 cm. long, suberect, simple or slightly branched, flexuous, very slender, asperulous, bearing numerous spikelets ; lateral pedicels adpressed, up to 2·5 mm. long. *Spikelets* lanceolate-oblong to oblong, about 5 mm. long and 1·5 mm. wide, 3–5-flowered. *Glumes* ovate, obtuse, herbaceous-membranous, with hyaline tips and margins ; lower 1–1·3 mm. long, 1–3-nerved ; upper up to 2 mm. long, 3-nerved. *Lemmas* when flattened broadly elliptic-oblong and rotundately obtuse, 2·5–2·8 mm. long, membranous with hyaline tip and margins, greenish with

Puccinellia acroxantha Smith et Hubbard. A. Spikelet (×8). B. & C. Lower and upper glumes respectively (×16). D. Lemma (×16). E. & F. Palea (×16). G. Ovary, styles and stigmas (×16). H. Lodicules (×24).

yellowish tips, five-nerved with the central and outermost nerves pubescent in the lower third, the remainder glabrous and smooth. *Paleas* linear, obtuse, keels shortly and coarsely ciliate.
ORANGE FREE STATE : Fauresmith Division ; Knoffelfontein, by side of eroded ditch below the Goedemansberg, c. 1390 m., Jan. 1928, *Smith* 5415 (in Nat. Herb. Pretoria & Herb. Kew).

The species of *Puccinellia* in other parts of South Africa are still very imperfectly known. Two species are recorded in the Flora Capensis, *P. angusta* Smith et Hubbard, referred to above, and *P. Borreri* Hitchc. The latter requires further study in South Africa and comparison with the plants of Western Europe. It is but poorly represented at Kew. Additional material to that enumerated in the Flora Capensis was collected by H. H. W. Pearson at Beukesfontein in sand near a spring (no. 4968), and at Karree Boom Fontein, in drying mud near a water conduit (no. 3924). Both are less than 4 in. high, with short convolute leaves and dense panicles. Somewhat similar examples are known from Weymouth and Poole in Dorset, collected by C. B. Clarke (nos. 3416 and 46800A).

XVIII. BERGIUS, DESCRIPTIONES PLANTARUM, AND LINNÉ, MANTISSA PRIMA. T. A. Sprague.

The two works which form the subject of the present communication were both published in the year 1767. That of Bergius was a descriptive account of a collection of dried plants brought back from the Cape of Good Hope by Michael Grubb, a Director of the Swedish East India Company, while Linné's 'Mantissa prima' included various new genera and species from the Cape, in addition to many from other parts of the world. It naturally happened that a certain amount of overlapping occurred, the same new species being described under different names in the two books: for example, *Gnidia viridis* Berg. Descr. 125 and *Gnidia simplex* Linn. Mant. 67 are now treated as conspecific (Wright in Dyer Fl. Cap. v. sect. 2, 53: 1915). The question which of the two works was published first is therefore of some practical importance, and the facts have accordingly been investigated in response to a request from Prof. C. E. Moss, who drew the writer's attention to this problem.

The chief difficulty encountered is concerned with the date and mode of issue of Linné's 'Mantissa prima.' It is independently paged, and has a separate (but abbreviated) title-page and separate index, but appears to have been issued in one part with the second volume of his 'Systema Naturae,' ed. 12. Not only is it commonly bound up at the end of that volume in botanical libraries, and also catalogued under it, but the last page of the second volume proper includes "Errata" from the 'Mantissa,' and has "Man—" (the first three letters of "Mantissa") at the bottom, in accordance with the then customary practice of printing the first few letters of each page at the bottom of the preceding one. It seems clear, therefore, that the second volume of the 'Systema,' ed. 12, and the 'Mantissa' were issued together, probably in a single part.

The dedicatory letter of Bergius, Descr. Pl. Cap., was dated Stockholm, 25 Aug. 1767, and as the book was published in Stockholm, it seems probable that it appeared in September, 1767. The date on the title-page of the 'Systema' ed. 12, vol. ii., and on that of the 'Mantissa' is 1767. Fortunately Linné's own correspondence* shows which of the works has priority. He wrote as follows to N. L. Burmann: "Dr. Bergius edidit *Descriptiones plantarum ex Cap. B. Spei.* Stockh. 1767, 8vo. apud Salvium. Continet circiter 300 plantas descriptionibus exaratas, quas accepit a quodam Grubb, qui ad Cap. B. Spei in reditu ex Indiis fuit. Dum tomus secundus systematis mei imprimebatur et corrigebatur ab eius fratre, edidit suas descriptiones, quasi non vidisset meam Mantissam adeoque sua nomina imposuit singulis plantis et generibus. . . . Upsaliae 1768, d. 7 Maji" (Dr. Bergius has published *Descriptiones plantarum ex Cap. B. Spei*, Stockh. 1767, Salvius. It

*Smith, J. E., Sel. Corresp. Linnaeus, i. 221 (1821); Hall, H. C. van, Epistolae Ineditae Caroli Linnaei, 91, 103 (1830).

contains about 300 descriptions of plants which he received from a certain Grubb, who visited the Cape of Good Hope on his return from the East Indies. While the second volume of my ' Systema ' was being printed and corrected by his brother, he published his own descriptions, just as if he had not seen my ' Mantissa,' and even gave his own names to individual species and genera). Later on Linné complained to Burmann that Bergius had never shown him even a single one of his Cape plants, and had published his ' Descriptiones ' without changing the names of sundry new species, which were conspecific with those described in the ' Mantissa,' although he had seen proofs of the latter at the printers (Upsaliae 1768 d. 21 Novembr.).

In a letter to Ellis, dated December 8, 1767, Linné mentioned " Bergius's Descriptions of Cape Plants, published this year," and in the final paragraph informed Ellis that " the second volume of my ' Systema,' comprehending the Vegetable Kingdom, is just published." In view of the definite statements contained in Linné's letters to Burmann and Ellis, it is clear that Bergius's ' Descriptiones ' was published before Linné's ' Mantissa.' In the absence of evidence to the contrary it may be assumed for working purposes that the ' Descriptiones ' appeared in September 1767, and the ' Mantissa ' in November, 1767.

XIX.—MISCELLANEOUS NOTES.

The following appointments have been made by the Secretary of State for the Colonies :—Mr. J. D. SHEPHERD, O.B.E., Irrigation Officer, Agricultural Department, Palestine ; Mr. M. VARDY, Manager, Experimental Fruit Farm, Sierra Leone ; Mr. L. P. HENDERSON (Agricultural Instructor, Federated Malay States), Superintendent, Agricultural Department, Nigeria (*K.B.*, 1924, p. 27) ; Mr. H. M. GARDNER (Senior Assistant Conservator of Forests), Conservator of Forests, Kenya ; Mr. G. N. SALE (Assistant Conservator of Forests, Cyprus), Director of Forests, Mauritius ; Mr. A. W. ANDERSON, B.Sc., Superintendent, Agricultural Department, Nigeria ; Mr. D. A. LANGDON, Produce Inspector, Nigeria ; Mr. D. D'EMMEREZ DE CHARMOY (Assistant Director), Director of Agriculture, Mauritius.

WILHELM BECKER. We much regret to record the death on October 12th, 1928, of Herr Wilhelm Becker of Kirchmöser (Havel), Germany, the well-known specialist on the genus *Viola*. Herr Becker has published several papers in the *Kew Bulletin*, and paid a visit to England last Spring, during which time he spent several days in the Herbarium.

RICHARD HIND CAMBAGE, C.B.E.—We record with regret the death of Mr. R. H. Cambage, C.B.E., the President of the Australian Association for the Advancement of Science, which took place at

Sydney, New South Wales, on November 28th, 1928. Mr. Cambage was formerly Chief Mining Surveyor of New South Wales, and from 1915-1924 was Under Secretary for Mines. He was a keen Botanist and devoted all his leisure time to botanical study. He contributed numerous papers to the Linnean Society of New South Wales, among them being " Notes on the Native Flora of New South Wales," which appeared in 10 parts, and " Notes on the Botany of the Interior of New South Wales," with plates, in 8 parts.

Acacia seedlings were also a subject of great interest to him, and he published 12 illustrated papers on this subject in the Proceedings of the Royal Society of New South Wales.

Mr. Cambage was President of the Royal Society of New South Wales in 1912, when his address, published in the Proceedings, was devoted to Antarctica and to the Development and Distribution of the Genus Eucalyptus ; he was again President in 1923, when his address was on " Australian Resources of Liquid Fuels." He was elected President of the Australian Association at the meeting held at Hobart, Tasmania, in January, 1928.

Dr. William G. Smith.—We much regret to record the death of Dr. William G. Smith, of the East of Scotland Agricultural College, which occurred at Edinburgh on December 8th, 1928. Dr. Smith was born at Dundee on March 20th, 1866, and graduated in pure Science at St. Andrews. Later he visited Germany and studied under Prof. von Tubeuf at Munich, where he gained the degree of Ph.D. He translated and amplified Tubeuf's work " Pflanzenkrankheiten durch Kryptogamen Parasiten verusacht," and " Tubeuf and Smith " was the standard work amongst mycologists and pathologists for many years. It stood alone in usefulness till the appearance of George Massee's writings, and even now is held in very high esteem. After his return to England Smith was appointed Lecturer in Botany at the Yorkshire College, Leeds (now Leeds University), and it was during this period of his career that he became celebrated as an ecologist, publishing many survey maps and ecological papers. He was attracted to this subject through his brother Robert Smith, who had in turn been inspired by the magnetic influence of Flahault. Smith was an enthusiastic member and also Secretary of that small band of workers known as the " British Vegetation Committee," from which sprang, in 1912, the " British Ecological Society," of which he was elected an Honorary Member.

In 1908 Smith was appointed head of the Biological Department of the East of Scotland Agricultural College, and it was from Edinburgh that he took up the study of Scottish grasslands with which his name will always be associated. During recent years he was more concerned with agricultural problems and was appointed Advisor in Agricultural Botany to the Scottish Board of Agriculture. His eldest son, Dr. Noel J. G. Smith, was appointed in 1926 to the Chair of Botany at Grahamstown in succession to Dr. S. Schonland.

A. D. C.

Fifth International Botanical Congress, 1930.—The following Circular with regard to the International Botanical Congress has been received from Dr. Briquet, and it is printed here in order to call attention to the date by which motions should be sent to the Rapporteur général.

FIFTH INTERNATIONAL BOTANICAL CONGRESS
CAMBRIDGE, 1930.

Motions on the subject of Nomenclature for consideration by the Congress should be in the hand of the Rapporteur général, Dr. John Briquet, before September 30, 1929.

Motions must be presented in the form of additional articles (or amendments) to the Rules of 1905-1910, drawn up in the form adopted in the International Code, and must be drafted as briefly as possible in Latin, English, French, German, or Italian. At least 100 printed copies must be presented.

According to the decisions of the Brussels Congress 1910, only motions relating to new points which were not settled in 1905 and 1910 can be presented. Motions which do not answer to these conditions shall only be discussed if the Cambridge Congress 1930 decides to take them into consideration.

For further information about the programme of work for nomenclature, apply to the Rapporteur général, Dr. John Briquet, Conservatoire botanique, Geneva (Switzerland).

The Plant-Life of the Balkan Peninsula*.—This is the first of a series of Monographs of Plant Geography published by the Clarendon Press, Oxford. The author has had considerable field experience in many parts of the Peninsula and deals with his subject on a wide and modern basis. The opening chapters describe the physical features, geology, and climate of the area. Ecological aspects are dealt with in seven subsequent chapters and one chapter is devoted to the cultivated crops. The remaining six chapters are phytogeographical in the widest sense.

Of particular importance is the chapter on Duration and Life-Forms, in which the whole flora of the Balkan Peninsula is analysed by means of Raunkiaer's system and also by a system specially prepared by the author. The coincidence and contrast of different biological spectra leads to some important conclusions. A chapter on Plant Succession introduces new concepts into the study of the vegetation of the area, and a long chapter deals very fully with the influence of man on the Flora and Vegetation. The flora has been very carefully analysed and the results are summarized for each family by methods quite new in phytogeography. Later chapters deal with the distribution of the flora both within and outside the

*The Plant-Life of the Balkan Peninsula, A Phytogeographical Study, by W. B. Turrill. Clarendon Press, Oxford, 1929, pp. 490 + xxiv, plates 10, maps 11. With an Editor's Preface by Prof. A. G. Tansley, F.R.S. Price 30/-

Balkan Peninsula. The area is divided into convenient units for purposes of analysis and a final scheme of botanical subdivisions is proposed. The relationships of the flora and vegetation to those of surrounding countries are traced, and the author indicates the outstanding resemblances and contrasts and the probable history of the flora. He points out the probable methods of evolution of different genera, lines of migration, and areas where *in situ* development has been particularly great. A full account is given of the endemic and relict species in which the Peninsula is so rich. The 'Age and Area' hypothesis as applied to the flora of the area is given very critical consideration and is then applied, with interesting but varying results, to certain groups of plants.

The book forms the first attempt to describe the whole of the Balkan Peninsula from the botanical standpoint, and it may well serve as a model for future volumes. The author, who has worked laboriously on his task for upwards of ten years, is to be warmly congratulated on its successful issue. The book is excellently printed by the Clarendon Press and its general format makes it a handsome volume.

Flora of Trinidad and Tobago.*—The appearance of the first two parts of this greatly needed Flora, issued by the Department of Agriculture, Trinidad and Tobago, is very welcome. The manuscripts were prepared in Trinidad by the Department and later checked at the Kew Herbarium, and the work will continue on these lines, appearing in small parts at intervals. The present parts consist of the first part of Volume i, which is to be devoted to the *Polypetalae*, comprising the Ranalian Cohort with the families *Ranunculaceae-Nymphaeaceae*; and the first part of Volume ii (*Gamopetalae*), dealing with the *Rubiaceae*. Keys to the families, genera and species are provided. The specific descriptions are of varying length, being longer when a species is described for the first time, and are followed by the distribution of the species within the area and its range outside it. The vernacular and local names of species are given when known, but full synonymy is not attempted, and collectors' numbers are only cited under the rarer species. Notes of taxonomic interest appear here and there, particularly in the part dealing with the difficult family *Rubiaceae*, in which much revision has been necessary. The authors of these parts are to be congratulated on the care and courage with which they have made this useful beginning.

Crantziola versus Lilaeopsis.—In Bull. Soc. Nat. Mosc. 1915, n.s. xxix. 124 (1916) Koso-Poliansky adopted the generic name *Crantziola* F. Muell. (Syst. Cens. Austral. Pl. 63 : 1882) in place of

*Flora of Trinidad and Tobago, Vol. i, Part 1, pp. 1–22, Ranales, by R. O. Williams, price 1*s.*; Vol. ii, Part 1, pp. 1–48, Rubiales, by R. O. Williams and E. E. Cheesman, price 2*s.* Trinidad: printed by the Government Printer, Government Printing Office, Port of Spain.

Lilaeopsis E. L. Greene (*Crantzia* Nutt.) on the ground that it is the earliest valid name for the genus in question, and he also transferred four species of *Lilaeopsis* to *Crantziola*.

The publication of the name *Crantziola* by F. Mueller was not effective as it appeared *in synonymy* (Art. 37, 38). Mueller himself actually adopted *Crantzia* Nutt. in both editions of his "Systematic Census of Australian Plants" (1882 and 1889), and in his "Key to the System of Victorian Plants," ii. 27 (1885) and i. 55, 265 (1887-8). The effective publication of *Crantziola* therefore dates from 1916, when Koso-Poliansky actually adopted it. As the generic name *Lilaeopsis* was effectively published in 1891, *Crantziola* Koso-Pol. is invalid, and *Lilaeopsis* stands.

F. Mueller in several instances suggested new names which he did not himself adopt. These are now-a-days regarded as non-valid—*vide* Sprague in Journ. Bot. 1922, 137, 315. "A new name should not be regarded as valid unless it is proposed unequivocally and unconditionally." M. L. GREEN.

Florae Siamensis Enumeratio.*—When part 2 of this compilation was issued it was anticipated that only one more part would be needed to complete the *Polypetalae*: this expectation is, however, wide of the mark, as the present part comprises only the *Connaraceae* (8 pages) and the *Leguminosae*. C.E.C.F.

The Unconventional Garden.†—Sir Arthur Hort occupies a prominent place amongst contemporary amateur gardeners, and his book, recently published under the above title, is sure to be welcomed by a large number of cultivators of plants. His interest in gardening, whilst no doubt of a sufficiently catholic nature, appears to be centred more especially in herbaceous and rock garden plants, although he turns a kindly eye in his book occasionally towards certain shrubs. One gathers that the space he has available for gardening is not large enough for him to be able to accommodate things that take up much room.

The first part of the book he describes as "The Calendar," and in this he discusses his favourite plants as they show their beauties month by month, recounting his successes or difficulties with them, their idiosyncracies, and giving many interesting details of the places where they grow in nature and the conditions under which they exist there. The second part is entitled "Plants and their Places," which is sufficiently indicative of its character. It includes a very excellent chapter on Irises and others equally attractive and interesting on the "Rock Garden" and "Wild Corners."

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*A list of Plants known from Siam with Records of their Occurrence, by W. G. Craib. Published for the Siam Society by the Bangkok Times Press Ltd., Bangkok. Luzac & Co., London, 1928, pp. 359–561, Part 3. Price 12*s.* 10*d.*

†The Unconventional Garden, by Sir Arthur F. Hort, Bart., M.A. London, Edwin Arnold & Co., 1928, pp. viii.+280. Price 10*s.* 6*d.*

Not only is all this written with a simple charm and an absence of adjectival exuberances that is very welcome in comparison with some recent efforts in a similar kind of literature; it is, besides, so full of cultural information that it must be of the greatest practical value to all those of its readers who are concerned with the plants the author loves and grows so well. W. J. B.

Dicymbe corymbosa *Spruce ex Benth.*—With reference to this species (*see Kew Bull.* no. 9, 1928, pp. 371-4), the following extract from a letter received from Mr. B. R. Wood, Conservator of Forests in British Guiana, is of interest :—" With regard to the very interesting identifications of *Dicymbe* I note that *D. Altsoni* is described as a large tree reaching a height of 90 feet; whilst *D. Jenmani* was noted as only 8 feet or more, and *D. corymbosa* was said by Spruce to be normally from 10 to 15 feet in height and in rare instances to attain to 30 feet.

D. corymbosa may well be as described by Spruce on the Rio Uaupes, but this is certainly not the case in British Guiana, where Hohenkerk passed through considerable areas where the tree is dominant on the Potaro Railway Survey, and notes it as a large tree. Mr. Hohenkerk states that he would consider the average height of the trees to be from 70 to 90 feet. Where the Forestry Department Expedition passed through areas of this forest we found the tree had a very peculiar habit. It grew as a straight, moderately tall tree of good log form with smooth bark, to a height often of 90 feet (my estimate) or 100 feet (T. A. W. Davis' estimate), when it would commence to go very unsound a few feet from the base. Meanwhile just above the root collar it would be producing a number of small epicormic branches looking like coppice shoots. The old tree would then fall down and these shoots would go ahead very quickly, more being produced at intervals, until the tree had become what looked like a clump of coppice. Hohenkerk notes measuring such a clump on the Potaro Railway Survey where the shoots emerged at about six feet from ground level, they were thirteen in number varying from 8 inches to 14 inches in diameter. In this phase of its growth the clumps attain a height from about 50 to 70 feet. Another surprising feature is that these clumps form pure forest over considerable areas, which are devoid of undergrowth, this with a rainfall of some 120 inches, 5 degrees north of the Equator."

Triana's Flora Neo-Granadina.—The title of this work was included in Pritzel's Thesaurus, ed. 2, 323 (1872) as follows: " Triana, José. Nuevos jéneros e especies de plantas para la Flora neogranadina. Bogotá, imprenta del Neogranadino. 1854. 4. 28 p." It does not appear to be represented in London, nor has it been traced in any library Catalogue. The following particulars of some of the new plants described in it have been obtained by collating certain references to Colombian plants contained in papers by H.

Karsten in Linnaea, vol. xxviii (1856), and by Triana and Planchon in Ann. Sc. Nat. sér. 4, vol. xvii (1862). It was cited by Karsten as "Flora Granadina" and "Flora Neo-Granadina," and by Triana and Planchon as "Nuev. plant. para la Fl. N.-Granad." and "Nuev. gen. y esp., etc. (Bogota, 1854)."

Among the contents of the work were five new genera and one new species enumerated below, all bearing Karsten's name as joint author. What else it contained is unknown.

Brotobroma *Karst. et Triana* in Triana, op. cit. 11 (1854); Karst. in Linnaea, xxviii. 446 (1856); Triana et Planch. in Ann. Sc. Nat. sér. 4, xvii. 337 (1862), cited as a synonym under *Herrania* Goud. (Sterculiaceae).

B. aspera *Karst. et Triana*, l.c.—Cited as a synonym of *Herrania pulcherrima* Goud. by Triana et Planch. l.c.

Burmeistera *Karst. et Triana*, l.c. 13; Karst. l.c. 444 (Lobeliaceae).—At one time regarded as a section of *Centropogon* C. Presl, but recently restored to generic rank by Gleason.

Codazzia *Karst. et Triana*, l.c. 17; Karst. l.c. 426 (Bignoniaceae).—Now treated as a section of *Delostoma* D. Don.

Loevigia *Karst. et Triana*, l.c. 22; Karst. l.c. 434. (Melastomaceae).—Now reduced to *Monochaetum* Naud.

Cephalotomandra *Karst. et Triana*, l.c. 23; Karst. l.c. 429 (Nyctaginaceae).—Now regarded as a section of *Pisonia* L.

Matisia castaño *Karst. et Triana*, l.c. 24; Karst. l.c. 430; Triana et Planch. in Ann. Sc. Nat. sér. 4, xvii. 326 (1862).

T. A. S.

The Trees of New Zealand.*—We have received from the State Forest Service, Wellington, New Zealand, a copy of a little book bearing the above title. The authors are Dr. L. Cockayne and Mr. E. Phillips Turner. The book owes its origin primarily to a desire to supply the delegates of the Third British Empire Forestry Conference, 1928, with a brief account of the indigenous forests of New Zealand and with short descriptions of most of the species that compose them. For a work running to 171 pages only, two-thirds of the space of which is given up to illustrations, the descriptive matter, although necessarily condensed, is commendably adequate. More than a hundred species are illustrated by a flowering or fruiting spray, and accompanying each illustration is a brief description and

*The Trees of New Zealand, W. A. G. Skinner, Government Printer, Wellington, New Zealand, 1928. Price four shillings.

an indication of the habitat of the tree. The work is a very creditable production and should be greatly appreciated by people in New Zealand who are interested in the wonderful vegetation of that country. It is worth a place also on the bookshelves of horticulturists in the British Isles whose gardens are situated in the milder counties, where many New Zealand trees and shrubs succeed so well.

Mesembryanthemum and allied Genera.*—This work consists largely of notes previously published by the author in "South African Gardening and Country Life," and collected together in book form they make a very useful and interesting volume. After the introduction there is a chapter with coloured as well as black-and-white illustrations, giving some of the more remarkable growth-forms. The next part is mainly concerned with descriptions of new and little-known species. A third chapter contains a list of the genera and species of *Mesembrieae* occurring on the Cape Peninsula, with two keys (one of which is based as far as possible on fruit-characters) to indicate how the genera may be distinguished. Finally there are descriptions in Latin of 100 new species of which 66 are published here for the first time, and many new combinations incidental to the work undertaken by the author.

Looking through the pages of her "Notes" the reader is struck by the painstaking care with which Mrs. Bolus has recorded her observations—colour of flowers, time of day when the flowers open, length of flowering time and season, habit and habitat, factors governing these, adaptations and devices for protection and conservation of water—the all important element, pollinating mechanisms, insect visitors, etc. The volume should draw attention to an interesting field so profitably being explored not only by Mrs. Bolus but by Mr. N. E. Brown in England and Prof. Schwantes in Germany.

It is unfortunate that the coloured plates suffered in the reproduction by losing the brilliance of the originals, which is misleading to those not acquainted with the plants in their native habitat, but, on the other hand, this is compensated for by the fact that there are numerous figures which are exact as to detail. C. A. S.

"A Sower."—In the note recording the presentation of this statue (*K.B.* 1929, no. 2, page 63), we regret that the name of Sir Edwin Lutyens, R.A., was, through a misprint, transcribed as Sir Edward Lutyens.

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*Notes on Mesembryanthemum and some allied Genera, by H. M. L. Bolus, Hon. Curator, Bolus Herbarium. Part 1, pp. 1–136, with 21 illustrations in colour and numerous figures in black-and-white. Speciality Press of South Africa Ltd., 1928 (price not stated).

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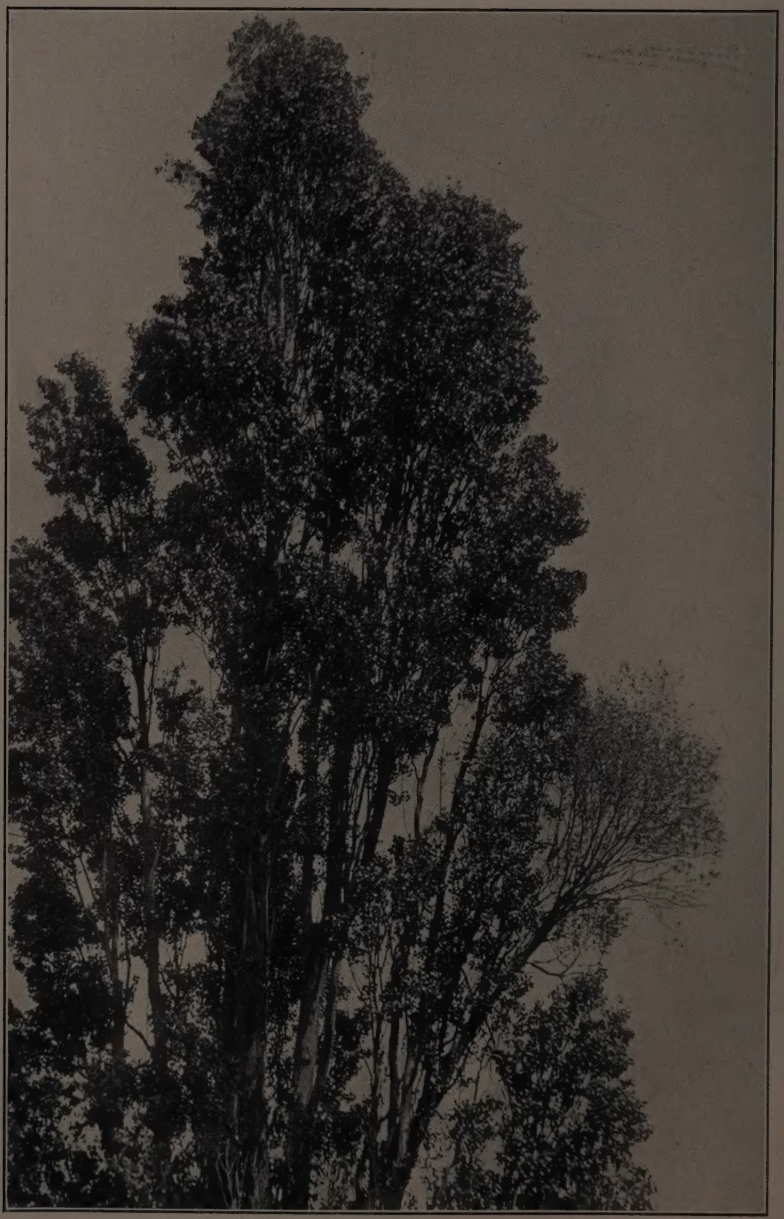
(659) Wt. 85/18 1M 4/29 S.E.R. Ltd. Gp. 9.

PLATE V



Lombardy Poplar, Botanic Gardens, Christchurch, New Zealand, showing branch reverting to typical Black Poplar.

To face page 97.]

Photograph by Mr. James Young.